In the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Original) A data transfer controller comprising:

a request queue controller capable of receiving, prioritizing and dispatching data transfer requests each specifying a data source, a data destination and a data quantity to be transferred;

a data transfer hub connected to the request queue controller for receiving dispatched data transfer requests;

a plurality of ports having an interior interface connected to the data transfer hub which is so configured as to be the same for each port and an exterior interface configured for an external memory/device which, in operation, is connected to said port, the interior interface and the exterior interface being connected for data transfer therebetween;

wherein the data transfer hub being capable of controlling data transfers from a source port corresponding to the data source to a destination port corresponding to the data destination in quantities corresponding to the data quantities to be transferred under a currently executing data transfer request; and

wherein at least one of said plurality of ports consists of an active data port connected to said request queue controller capable of specifying a data source, a data destination and a data quantity to be transferred.

2. (Original) The data transfer controller of claim 1, wherein:

said active data port capable of generating a data transfer request specifying said active data port as said data destination;

wherein said data transfer hub generates a read command to said data source and transfers read data to said active data port.

3. (Original) The data transfer controller of claim 2, wherein:

said data transfer hub generates a pre-write command to said active data port prior to transferring said read data to said active port; and

said active data port generates an acknowledge signal to said data transfer hub following receipt of said pre-write command when said active data port is ready to receive data.

4. (Original) The data transfer controller of claim 1, wherein:

said active data port capable of generating a data transfer request specifying said active data port as said data source;

wherein said data transfer hub generates a read command to said active data port and transfers read data to said data destination.

5. (Original) The data transfer controller of claim 4, wherein:

said interior interface of said active data port supplies a read data command to said exterior interface of said active data port in response to read data command of said data transfer hub.

6. (Original) The data transfer controller of claim 4, wherein:

said interior interface of said active data port includes a first-in-first-out buffer;

said exterior interface writing data into said first-in-first-out buffer upon generation of said data transfer request by said active data port; and

said interior interface supplying data read from said first-in-first-out buffer upon receipt of said read command from said data transfer hub.

7. (Original) The data transfer controller of claim 6, wherein:

said interior interface of said active port generates a stall signal to said exterior interface of said active port when said first-in-first-out buffer is full; and

said exterior interface refrains from writing data into said first-in-first-out buffer upon receipt of said stall signal.

8. (Original) A method of data transfer comprising the steps of:

receiving, prioritizing and dispatching data transfer requests each specifying a data source, a data destination and a data quantity to be transferred;

transferring data from a source port selected from a plurality of ports corresponding to the data source to a destination port selected from said plurality of ports corresponding to the data destination in quantities corresponding to the data quantities to be transferred under a currently executing data transfer request;

wherein at least one of said plurality of ports is an active data port capable of specifying a data source, a data destination and a data quantity to be transferred.

9. (Original) The method of data transfer of claim 8, wherein:

said active data port is capable of generating a data transfer request specifying said active data port as said data destination.

10. (Original) The method data transfer of claim 9, further comprising the steps of:

supplying a pre-write command to said active data port prior to transferring said read data to said active port; and

supplying an acknowledge signal from said active data port following receipt of said pre-write command when said active data port is ready to receive data.

11. (Original) The method of data transfer of claim 8, wherein:

said active data port is capable of generating a data transfer request specifying said active data port as said data source.

12. (Original) The method of data transfer of claim 11, further comprising the steps of:

writing data into a first-in-first-out buffer upon generation of said data transfer request by said active data port; and

supplying data read from said first-in-first-out buffer upon receipt of a read command by from said active data port.

13. (Original) The method of data transfer of claim 12, further comprising the steps of:

generating a stall signal when said first-in-first-out buffer is full; and

refraining from writing data into said first-in-first-out buffer upon generation of said stall signal.

14. (New) The data transfer controller of claim 1, further comprising:

a plurality of transfer request nodes disposed in a chain having an upstream most node and a downstream most node, said downstream node connected to said request queue controller;

a plurality of transfer requestor nodes each capable of generating service requests and each connected to a corresponding one of said plurality of transfer request nodes; and

a special transfer request node connected to said upstream most node of said plurality of transfer request nodes and said active data port, said special transfer request node connecting said active data port to said request queue controller via said plurality of transfer request nodes.

15. (New) The method of data transfer of claim 8, wherein:

said step of receiving, prioritizing and dispatching data transfer requests is performed by a request queue controller;

further comprising the steps of:

transferring data transfer requests from each of a plurality of transfer requestor nodes to said request queue controller via a chain of a plurality of transfer request nodes having a an upstream most node and a downstream most node, said downstream node connected to said request queue controller; and

transferring data transfer requests from said active data port to said request queue controller via a special transfer request node connected to said upstream most transfer request node.